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Agriculture.

Agricultural situation and outlook for Michigan, 1934. 1934. 26p. Michigan state college of Agriculture and applied science. Extension Bulletin no. 135.

Aiding Arizona's Agriculture. Forty-fourth annual report for the year ended June 30, 1933. 1934. 93p. Groundwater studies, p. 16-18. Pumping Machinery. p. 19-20. Downward movement and water holding capacity, p. 25-26. Financial rehabilitation of irrigation and drainage districts. p. 26-27.

County allotment control. By George E. Farrell. Farm Journal. v. 58, no. 2. February, 1934. p. 9, 27-28. How County Committees have functioned in great reduction campaign of AAA so far.

Crop and livestock reporting service of the United States. Washington, U. S. Government Printing Office, 1933. 104p. U.S. Department of Agriculture. Miscellaneous publication no. 171.

Economic bases for the Agricultural Adjustment Act. By Mordecai Ezekiel and Louis H. Bean. Washington, U.S. Government Printing Office, 1933. 67p. Emphasizes emergency condition that surrounded agriculture and industry prior to passage of Agricultural Adjustment Act, but does not purport to describe beneficial effects toward recovery since this and other measures have been in operation.

Farm-property taxation in Maine. By Charles H. Merchant and Merton S. Parsons 1933. 225-285p. Maine. Agricultural Experiment Station Bulletin no. 366.

Farmers' problem - everybody's problem. B. H. A. Wallace. Extension Service Review. v. 4, no. 8. December, 1933. p. 113-114, 128. How to bring about fair exchange value for farm products.

Foreign markets are needed. Implement & Tractor Trade Journal. v. 49, no. 1. January 13, 1934. p. 10-11. Present acreage reduction expedient made permanent policy would contract agriculture to basis adversely affecting national economic life.

Forty-sixth annual report, 1933. New York State College of Agriculture at Cornell University. Cornell University Agricultural Experiment Station. Ithaca, 1934. 169p. Agricultural Engineering, p. 31, 72-73.

Forty-sixth annual report of the Colorado Agricultural Experiment Station, 1932-33. 1934. 24p. Mechanical Engineering, p. 13-14. Irrigation investigations, p. 19-20.

Agriculture. (Cont'd)

Growing combine grain sorghums. By L. C. Aicher. 1933. 18p. Kansas. Agricultural Experiment Station. Circular no. 170.

Large-scale farming in the United States, 1929. Washington, Government Printing Office, 1933. 106p. U.S. Bureau of the Census.

Loans to farmers cooperatives. 1933. 15p. Farm Credit Administration. Circular no. 6.

New Mexico agricultural outlook - 1934. By L. H. Hauter. 1933. 16p. New Mexico. College of Agriculture and Mechanic Arts. Extension circular no. 127. Adapted in large part from National Agricultural Outlook.

Prospects for agricultural recovery. 1933. 3 parts. I. Economic situation in 1933. Bulletin no. 310. II. Refinancing farm mortgages in Iowa. Bulletin no. 311. III. Estimating advantages of the corn-hog plan to the individual farm. Bulletin no. 312. Iowa Agricultural Experiment Station.

Types of farming in the United States. Washington, U. S. Government Printing Office, 1933. 225p. U. S. Bureau of the Census.

Air Conditioning.

Comfort cooling with attic ventilating fans. By G. B. Helmrich and G. H. Tuttle. Heating, Piping and Air Conditioning. v. 6, no. 2. February 1934. p. 85-89. Conclusions: 1. It is quite practicable, by use of either centrifugal or propeller type attic ventilating fan, to very effectively cool sleeping rooms in moderate sized house. 2. Downstairs portion of house can be effectively ventilated if fan is connected to attic stairway in such manner that entire first floor can be placed under suction by way of first floor stairs. 3. Wherever possible capacity of fan should be such as to provide minimum of about 30 air changes per hour. 4. Natural ventilation, induced by stack effect of structure resulting from opening of attic doors and windows, is not nearly as effective in circulating air from out of doors as is attic fan which provides about 30 changes of air per hour. 5. It seems reasonable to conclude that attic fan ventilation for residences should prove to be satisfactory substitute for artificial cooling during large part of summer season under climatic conditions similar to those in Detroit.

Water chilled in vacuum cools air in home. Popular Mechanics. v. 60, no. 4. October, 1933. p. 512. Unit is known as decalorator, and has no moving parts although it will chill water to thirty-five degrees. Chilling is produced by applying physical law that water under high vacuum will vaporize at low temperatures. To produce evaporation, sensible heat of liquid is given off in form of latent heat in vapor. Chilling of liquid is consequent to this conversion of hear. Water is introduced in evaporation chamber in form of fine spray, and thus sufficient water surface is present to cause almost instantaneous evaporation of small quantity of water. When water at forty degrees is required only one percent of water is converted into vapor, absorbing its heat of vaporization from remaining ninety-nine percent, thereby chilling main

Air Conditioning. (Cont'd)

body of water. Chilled water is pumped from evaporator to cooling apparatus. Steam introduced through jet and traveling at high velocity through Venturi tube produces vacuum in evaporator. Standard methods of steam condensation are employed to re-convert this steam and vapor into liquid. Method is also suited to cooling drinking water. Operation is entirely automatic. Float control maintains constant level of chilled water in evaporator, thermostatic control valve shuts off steam to ejectors when chilled-water temperature goes below any desired temperature and, in case of varying load, thermostatic control turns unit on and off. Steam at any pressure may be used.

Apples.

Bruising and freezing of apples in storage and transit. By Dean H. Rose and J. M. Lutz. 1933. 15p. U.S. Department of Agriculture. Technical bulletin no. 370.

Associations.

Is now Farm Equipment Institute. Hardware and Implement Journal. v. 39, no.1. January, 1934. p. 14. At recent meeting of executive committee, National Association of Farm Equipment Manufacturers changed its name to Farm Equipment Institute to more clearly harmonize with increased activities. Gives officers.

Nominations for 1934-35 A.S.A.E. officers. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 28.

Breakwaters.

Breakwaters on the Great Lakes. By W. F. Heavey. Military Engineer. v. 25, no. 144. November-December, 1933. p. 486-489.

Building Construction.

Construction code signed by the President. Engineering News-Record. v. 112, no. 6. February 8, 1934. p. 209-213. Effective on March 2, the code will be administered by an authority set up by sponsoring organizations. Labor to have equal representation on national planning board.

These safety building methods will help eliminate accidents in homes. By Jean Muir Dorsey. American Builder and Building Age. v. 55, no. 6. September, 1933. p. 38-39, 65. According to estimates made by Statistical Bureau of National Safety Council, nearly as many people lose their lives from accidents in homes as are killed by automobiles. In 1931 total number of accidental deaths in United States was approximately 99,000, of which 33,000 were attributed to motor vehicles and 30,000 were classed as home accidents. Besides these fatal accidents in the home, it was estimated that there were 4,500,000 accidents of less serious nature.

Columbia River.

Columbia River - Nation's largest power pool. Power Plant Engineering. v. 38, no. 2. February, 1934. p. 81-83.

Conservation.

Present status of national conservation and the duck stamp. By Hon. Harry B. Hawes. 1934. 33p. Address delivered at 6th annual New England Game Conservation, held under auspices of Massachusetts Fish and Game Association, Boston, Mass., Jan. 13, 1934.

Corrosion.

Combating wear in military equipment. By Roger O. Day. Military Engineer. v. 25, no. 144. November-December, 1933. p. 505-508.

Corrosion of steel by gases containing traces of hydrogen sulphide: Effect of pressure and moisture conditions. By John M. Devine and others. 1933. 20p. U.S. Bureau of Mines. Technical paper no. 560.

Cotton.

Economic aspects of the grade and staple length of cotton produced in Oklahoma. By Roy A. Ballinger and Clyde C. McWhorter. 1933. 55p. Oklahoma. Agricultural Experiment Station. Bulletin no. 212.

Fruiting characters and time and cost of picking cotton varieties. By G. A. Hale. Journal of the American Society of Agronomy. v. 26, no.1. January, 1934. p. 38-43.

Lummus gyrator used extensively. Cotton Ginners' Journal. v. 5, no. 5. February, 1934. p. 12. Employs gyratory movement of staggered spring steel fingers to uniformly distribute seed cotton to feeder hoppers of cotton gin. Steel fingers work on three connecting rods which are driven by shafts supported on ball bearings. Moving in circular path, fingers successively and intermittently engage and move cotton, agitating and loosening cotton and hulls as it is moved through machine.

Drainage.

Land drainage in England and Holland. By W. H. Haile. Institution of Municipal and County Engineers. Journal. v. 60, no. 14. January 2, 1934. p. 624-1035. Discussion of British Land Drainage Act of 1930 and description of several modern drainage projects in Great Britain. Features of Zuider Zee reclamation in Holland.

Education.

Industry will foster post-graduate education. By E. B. Roberts. Electrical World. v. 103, no. 2. January, 1934. p. 77. In business today not more than half of better positions are held by college graduates. In future country will recruit larger proportion of its leaders out of ranks of those who have had extended formal education. This is so because there is not now in ranks relative number of young men of inherent ability that there was a generation ago. Those who have such innate abilities have found way to go to school and they make up large proportion of increase in high school and college enrollment.

Electric Service, Rural.

Electric Home and Farm Authority, Incorporated. General information. 1934. 4. p. Tennessee Valley Authority. Object is wider and greatly increased use of electricity in home and on farms in Tennessee Valley. Methods of procedure include: 1. Assist in financing consumer in purchasing efficient electrical equipment at very low prices. 2. Secure reduction in electric rates. 3. Engage in educational work and research to lower further cost of electric equipment and to make it better adapted to needs of average home and farm.

Final report of the National Rural Electric project, June 30, 1933. College Park, Maryland, 1933. 17p. Report no. M-16.

What electricity costs. Power. v. 78, no. 2. February, 1934. p. 68-69. Tables give cost by districts and United States totals.

Electric Wiring.

Wiring farmstead for electric service. By H. B. White. 1934. 1p. Agricultural Engineering News Letter. University of Minnesota.

Electricity in the home.

Electrification of the American home. By David E. Lilienthal. 1934. 4p. Mimeographed. Tennessee Valley Authority. Knoxville, Tennessee.

Electricity on the Farm.

Electricity in Norwich rural area. Rural Electrification and Electro-Farming. v. 9, no. 102. November, 1933. p. 166-168, 170, 172. Many villages and farms are receiving supply of electricity in this definitely rural area. Electric cooking is greatly appreciated. Use of small motor in farm work is found invaluable.

Gradual rural electrification. By H. P. Liversidge. Electrical World. v. 103, no. 4. January 27, 1934. p. 149-151. It is estimated that in 1932 about 1,000,000 farms in this country were electrified, more than 70 percent being served by electric utilities. Estimated total customers served in rural districts was 4,000,000.

Irradiation by ultra violet rays and farm animals. By M. L. Besnard. Genie Rural. v. 26. December, 1933. p. 20-23.

New methods in electro-culture. By S. S. Nehru. Royal Society of Arts. Journal. v. 82, no. 4234. January 12, 1934. p. 231-257. Author seeks to show that, with help of certain simple apparatus and easy technique, growth of plant in its cycle from seed to seed can be promoted with practical results. Methods worked out in India. Recommendations for use of sparking, violet-ray, X-ray, ultra-violet ray radiomagnetic and electromagnetic methods.

Response of greenhouse crops to electric light supplementing daylight. By R. B. Withrow. Illuminating Engineering Society. Transactions. v. 29, no. 1. January, 1934, p. 65-77. Data presented indicate that low light intensities, as produced by 15-2 lamp applied at night as supplement to daylight, increase flower production and earliness in flowering of certain crops, about as favorably as higher intensities, as from 500-W. lamp.

Electricity on the Farm. (Cont'd)

Little different times of night for five and ten hour periods. Bibliography.

Survey of rural electrification in South Carolina. By A. R. Wellwood and others. Columbia, S. C., 1933. 152p. South Carolina State Highway Department.

Engineering.

Progress in engineering knowledge during 1933. By P. L. Alger. General Electric Review. v. 37, no. 1. January, 1934. p. 4-10. Design engineering. Application engineering. Materials engineering.

Report of the chief of engineers, U. S. Army. 1933. 2. vols. Washington, U. S. Government Printing Office.

Engines.

High-speed convertible gas-diesels; their operating characteristics. By W. M. Kaufman. Power. v. 78, no. 2. February 1934. p. 70-72. Development, design and economy data.

Erosion Control.

Brief outline of projects underway and the problem of soil erosion and its control. 1934. 9p. Generalized statement by soil erosion service, U.S. Department of the Interior.

County land terracing program. By W. H. Gregory. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 22. Soil improvement program was divided into two phases: First, draining of many fields in Coosa Valley upon which crops were lost periodically due to poor draining; and second, terracing of fields in county with grade of between three and fifteen per cent, which comprises most of cultivated land in county, and, third, reforestation of fields in county of more than fifteen per cent grade.

Eighteen years of soil-erosion control. By S. P. Lyle. Extension Service Review. v. 4, no. 8. December, 1933. p. 120-122. Concensus of opinion among workers upon erosion-control problems from all groups is, broadly speaking: That forests effect most satisfactory protection for steep slopes; that perennial pastures are very effective on moderate slopes; that in every agricultural area there is a rather definite limit to steepness of slope for economic use under cultivation; and that these gently sloping cultivated fields require terracing, contour farming, and erosion resistant and soil-improvement crops; and that nearly level lands may be protected with suitable cropping practices.

Erosion control by C. C. C. Forces. By Russell Woodburn. Engineering News-Record. v. 112, no. 4. January 25, 1934. p. 105-107. Brush, stone and log barriers built as check dams to prevent further wash of gullies. Intercepting ditches concentrate floodflow. Extensive program to save farmlands.

Erosion Control. (Cont'd)

Halting erosion. By H. H. Bennett. American Forests. v. 40, no. 2. February, 1934. p. 62-65, 94-95. Map of general distribution of erosion in United States, survey of recent campaign against erosion in Tennessee Valley, Wisconsin, Washington.

Oklahoma County stimulates terracing. Extension Service Review. v. 4, no. 8. December, 1933. p. 123.

Saving the good earth. By Harold L. Ickes. Survey Graphic. v. 23, no.2. February, 1934. p. 53-39, 91-93. Mississippi Valley Committee and its plan. How committee functions, how its plan, conserving water and soil, will deal with erosion, forestation, flood control, agriculture, navigation, power.

U. S. to combat soil erosion by terracing farms. Popular Mechanics. v. 60, no. 4. October, 1933. p. 514. In $5,000,000 one-year program United States government will combat soil erosion by terracing farms. Government will supply technical directions and terracing equipment and land owners will provide power and labor.

Evaporation.

Rate of water evaporation in Texas. By R. E. Karper. 1933. 27p. Texas. Agricultural Experiment Station. Bulletin no. 484.

Extension.

Annual report of Maine extension service year ending June 30, 1933. 1933. 44p. Maine. Extension Service. Bulletin no. 211. Agricultural Engineering. p. 10-13.

Farm Buildings and Equipment.

Building improvements on the farm: Editorial. American Builder and Building Age. v. 55, no. 6. September, 1933. p. 18. After decade of stagnation, farm building has taken on new life, and today offers most promising field for sale of building materials and employment of building labor. Exact amount of this "potential" is hard to estimate, but it easily runs into billions. Houses and barns of six million farm families, village homes and stores which dot highways, country estates, and back-to-the-land cottages of ex-city dwellers - all with enlarged standards of living and housing and their expanding needs for schools, community buildings and business structures - these are parts of vast picture of opportunity in farm building field today. Farmers have been buying lumber, cement, roofing, paint, fencing and numerous products useful in fixing up and modernizing.

Farm building costs and labor earnings. By H. B. White and L. W. Neubauer. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 16-17. Table 1. Average value of farm buildings. Table 2. Labor earnings and annual cost of houses. Table 3. Labor earnings and annual cost of service buildings. Study shows distinct advantage for farm operator who has adequate buildings.

New developments in hog houses and equipment. By Fred Hale and H.P. Smith. 1933. 39p. Texas. Agricultural Experiment Station. Bulletin no. 486.

Farm Machinery and Equipment.

Baby combine covers field at five-mile gait. Popular Mechanics. v. 60, no. 4. October, 1933. p. 492-493. Designed particularly for small, diversified farms of corn belt, baby combine, pulled and powered by ordinary farm tractor, cuts and threshes grain at speed of five miles per hour. One man can operate both tractor and harvester-thresher which weighs only 2400 pounds. Machine cuts five-foot swath, but travels twice as fast as its ten-foot big brother, so does same amount of work. It has only two wheels, and they use airplane-type pneumatic rubber tires. Due to low air pressure in these tires, they absorb much of shock in negotiating uneven ground and at increased speed. Combine can be handled by any two-plow, power take-off equipped tractor. Width of threshing cylinder in combine is equal to width of cutter-bar, stalks of grain passing directly into cylinder head first, and width of straw stream is always same as width of swath cut by sickle. Straw going into cylinder in thin stream does not bunch, and each head is processed between cylinder and concaves, leaving straw same length as when cut. Speed variations do not affect separator because it has capacity of twelve-foot combine.

Check wire with a four-row corn planter. By Claude K. Shedd. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 18-20. Use of check wire with four-row planter may be summarized as follows: Cross-over method seems to be adapted only to mounted planters. When check wire is used with four-row planter in manner that is customary with two-row planters, cross check is not entirely satisfactory at ends of field. With operation as shown, except that stake is set about one foot to side of center line of planter, it is theoretically possible to get perfect check over nearly all of field, but there is constant error up to about 3 inches in check of cross rows located about four to six rods from each end of field.

Common binder head and knotter head troubles. By H. H. Musselman and A. J. Bell. 1933. 14p. Michigan State College of Agriculture and Applied Science. Extension Division. Extension Bulletin no. 134.

Cotton harvesting tests. Farm Implement News. v. 55, no. 3. February 1, 1934. p. 21. Field tests of finger-type cotton harvester in California in Acala cotton showed that machine picked 83 percent of cotton, leaving about 8 percent on plants and 9 percent on ground. Machine picked at rate of 500 pounds of seed cotton per hour.

Easing the draft of farm wagons. By E. A. Silver. Farm Implement News. v. 55, no. 3. February 1, 1934. p. 24. Results of tests conducted by Department of Agricultural Engineering of Ohio Agricultural Experiment Station, in cooperation with wagon wheel and rubber-tire manufacturers.

Farm tillage machinery laboratory. By R. B. Gray. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 6. This laboratory, which with its accessories will cost approximately $110,000, is intended to more completely equip present investigation dealing with cotton-production machinery conducted cooperatively by U.S.D.A. Bureau of Agricultural Engineering and the agricultural engineering section of Alabama Agricultural Experiment Station. In this laboratory opportunity will be afforded to: 1. Determine relation of different plow designs to draft requirement and to effect upon furrow slice in throw, inversion, pulverization, and coverage at different speeds, and depths of plowing, in soils varying progressively in their constants of classification. 2. Secure analogous data, as under 1, on other tillage machinery - harrows, drags, rollers, cultivators, etc. 3. Study of physical effects produced upon soil by different methods of tillage. 4. Study changes in tilth as affected by moisture and other natural agencies, in order to determine what is minimum soil manipulation necessary to obtain maximum beneficial effect upon plant growth. 5. Obtain accurate measurements of force components exerted by machine, resulting effects produced upon soil, and other basic information helpful in design of machines, with special reference to ruggedness of equipment for use in black belt or equivalent soils. 6. Determine wearing qualities of various metals and alloys that may be used for tillage equipment. 7. Study different methods of planting cotton under controlled physical conditions of soil, so as to determine method that will produce most favorable conditions for germination and growth in wet and in dry planting seasons. 8. Determine actual effect on tighter soils of tractor wheels and other equipment.

Farmer as metal-industry customer. By R. A. Fiske. Iron Age. v. 133, no. 1. January 4, 1934. p. 132-136, 188. Review of position and prospects of agriculture, showing relation of farmer to machinery and metal products.

Hours of labor on farm cut by modern equipment. Popular Mechanics. v. 60, no. 4. October, 1933. p. 542. Power and machinery on farms caused reduction in labor requirements in wheat and corn production of more than fifty per cent in some localities in last thirty years, and considerably higher percentage since 1840. Survey of department of agriculture shows that power and machinery have not affected labor requirements in cotton as much as in small grain and corn regions, except in some areas where large-scale methods and equipment are used. In these regions, labor was reduced thirty per cent in last thirty years.

Long-handled weed killer shoots poison like gun. Popular Mechanics. v. 60, no. 4. October, 1933. p. 517. Weed eradicator is five feet long, holds one quart of fluid and has spear point four inches long. There are three fins for scoring the root, channel in fins directing liquid to scored parts. Ball-and-socket fluid release directs any desired amount of liquid to roots, and it is claimed fluid channel will not clog. Grip link lever controls flow of fluid and foot bracket permits operator to force tool into hard soil.

Potato digger of new design announced by Ohio. Implement & Tractor Trade Journal. v. 49, no. 2. January 27, 1934. p. 22. Advantages claimed for this machine are as follows: 1. It pulls more easily than other type diggers. 2. It reduces damage to the potatoes by 50 to 60 per cent. 3. It has fewer moving parts to wear or cause adjustment, thus eliminating delays and costly repairs. 4. Separating bars may be operated at different

speeds - thus insuring successful results no matter what the soil conditions. 5. It is short and compact, easy to get around with in field, and stores in one-third less space than other machines. 6. One lever sets the machine. 7. It delivers potatoes in narrow row - straight back of the machine. 8. It is equally successful whether digging downhill, uphill or on level. Ohio Cultivator Co., Bellevue, Ohio.

Rotary tiller prepares soil or digs a ditch. Popular Mechanics. v. 60, no. 5. November, 1933. p. 726. Rotary soil tiller now on market pulverizes and aerates earth to depth of twelve inches, doing work of plow, disks and tooth harrow. Sharp-pointed, spring-mounted tines revolve through soil like picks to break it into very small particles, each sharp point breaking away small amount of ground instead of shearing it away in large pieces. Tiller may be adjusted to produce extremely fine or coarse condition. Only one trip over farm prepares soil for seeding. Attachments are available for weeding, cultivating, ridging, mowing, leveling, stationary engine work, cutting forest-fire lines and ditching. Equipped with forest-fire disks, machine penetrates heavy underbrush, cutting swath twenty-seven inches wide at rate of two miles per hour. High-pressure water pump can be attached for throwing four streams from one-quarter inch nozzles. In ditching, tiller is run over ground with tines set at maximum depth of twelve inches. Shoveler follows to remove loosened earth. Operation is repeated until desired depth is reached. In one test, machine completed ditch forty-five feet long and two and one-half feet deep in forty minutes with only one shovel wielder scooping out loose earth.

Farmhouses.

Home demonstration work. By Grave E. Frysinger. 1933. 14p. U.S. Department of Agriculture. Misscelaneous Publication no. 178.

Planning the Willamette Valley farmhouse for family needs. By Maud Wilson. 1933. 41p. Oregon Agricultural Experiment Station. Bulletin no. 320.

Fences.

Fence costs, and how to keep them down. Farm Journal. v. 58, no. 2. February, 1934. p. 25. Several ways to reduce initial cost and upkeep of farm fences are given by E. R. Cross as follows: 1. Plan farm so least amount of permanent fence will suffice. 2. Build fences for permanence and low maintenance by using most permanent type of construction and best grade of posts and wire consistent with needs. 3. Place posts at intervals of one rod or less; never more for permanent fence. 4. Use anchor posts for ends and corners, setting them below frost action (3 to 4 feet deep) and cross bracing consisting of wood or steel strut with two strands of No. 9 wire twisted together for cross tie. 5. Load of twining vegetation should be removed from fence each year as it increases corrosion and in some localities ultimately breaks down fence. 6. Steel materials should be protected by heavy coating of zinc (galvanizing). 7. Butts of wood posts should be treated with creosote to point six inches above ground line.

Fertilizer Spreaders.

Fertilizer placement studies on sassafras loam with the potato in New Jersey. By Wm. H. Martin, B. E. Brown, and G. A. Cumings. American Potato Journal.

v. 10, no. 10. October, 1933. p. 191-199. Summary: 1. Germination was influenced by location of fertilizer. 2. Largest number of tubers were produced where fertilizer was located at side of seed piece. 3. Largest total yields resulted from side application of fertilizer, regardless of whether on or below seed piece level. Main result indicates that for largest returns fertilizer should be applied in band 2 inches to each side of and on same plane as seed piece or 2 inches to each side of and 2 inches below seed piece.

Many experiments show how to apply fertilizer for best results. By H. R. Smalley. Fertilizer Review. v. 8, no. 4. October-November-December, 1933. p. 10-13. It is usually much better to apply mixed fertilizer in bands at sides of row and slightly below level of seed than to apply it under seed. For small grains, light applications may be made with seed. Too much mixing of fertilizer with soil is not good practice. Much improvement has been made in fertilizer distributors and attachments , and farmers may profit greatly by purchasing new equipment or adjusting old machines.

Method of fertilizer application for canning peas. By F. L. Musbach. Journal of the American Society of Agronomy. v. 26, no. 1. January, 1934. p. 70-74.

Fire Protection.

Where there's smoke. By Karl Detzer. Country Home. v. 58, no. 2. February, 1934. p. 12-14, 29-30. Proving that time to worry about fire is before it starts.

Flax.

Research paves way for flax industry. Oregon Farmer. v. 56, no. 28. December 28, 1933. p. 7. Prospect of $3,500,000 in federal funds to finance establishment of linen industries in Oregon has aroused keen interest in available information on culture of fiber flax, according to farm crops specialists of Oregon State college. Flax growing has been carried on commercially in Oregon in limited way for years to supply state prison flaxplant but no great expansion was possible without more outlets. Except for few areas in Michigan, Oregon is only region in United States where fiber flax is grown commercially. Present tariff rates invite heavy importations of flax fiber from abroad, however, and these may need to be considered in Oregon's expansion plans.

Floods and Flood Control.

Agricultural engineer in flood control By O. M. Page. Military Engineer. v. 25, no. 144. November-December, 1933. p. 490-493.

Floors.

Earthquake resistance of timber floors. By N. B. Green and A. C. Horner. Engineering News-Record. v. 112, no. 5. February 1, 1934. p. 142-145. Report of first part of test program designed to develop facts about range of earthquake resistance possessed by various combinations of wood floors or roofs and their connections to brick, tile or concrete walls.

Flow of Water and Gases.

Flow of water in flumes. By Fred C. Scobey. 1933. 99p. U.S. Department of Agriculture. Technical Bulletin no. 393.

High discharge coefficient on long steel pipe line. Engineering News-Record. v. 112, no. 5. February 1, 1934. p. 135.

Fuels.

Some fuel and compression-ratio tests. By H. N. Stapleton. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 21-22.

Heat Transmission.

Heat transmission. By William H. McAdams. New York. McGraw-Hill Book Company, Inc., 1933. 383p.

Heating.

Waste heat in smoke flue keeps water hot. Popular Mechanics. v. 60, no.4. October, 1933. p. 601. Diagrams.

Hotbeds, Electric.

Better plants through electric soil heating. By T. E. Hienton. Electricity on the Farm. v. 7, no. 1. January, 1934. p. 4-6.

Electric hotbeds aid market gardeners. Electrical World. v. 103, no.2. January 13, 1934. p. 82. It has been found that seeds germinate, plants grow and cuttings take root in from 20 to 30 percent less time than under ordinary methods. In bench propogation it has been found that number of cuttings rooted has been increased from 10 to 50 percent by electric heating.

Houses.

Community planning with transportable houses. By T. H. Buell. Architectural Record. v. 75, no. 1. January, 1934. p. 11-36. Commercial design of portable houses: Buell fabricated house system; Stran-steel house; Homes of Columbian Steel Tank Co.; National steel homes, Hollywood, Calif.; American Houses, Inc.; General Houses, Inc.; Outline specifications, cellular steel unit construction; Wheeling Steel House; Frameless-steel construction system; experimental buildings, U. S. Department of Agriculture.

Factory-built houses. - Industry's potential market. Factory Management and Maintenance. v. 91, no. 8. August, 1933. p. 320-322. New materials and new uses of old materials.

Making the most of it. By Lewis E. Welsh. Country Home. v. 58, no. 2. February, 1934. p. 16-17, 38. Few simple changes convert old house int [illegible].

New housing designs and construction systems. By C. T. Larson. Architectural Record. v. 75, no. 1. January, 1934. p. 3-11. Symposium consisting of following papers: Research findings of Bemis Industries, Inc., J. Burchard; Dymaxion houses, B. Fuller.

Predicts changes in house building. Canadian Engineer. v. 65, no. 23. December 5, 1933. p. 11. By special methods of insulation, fire-safe homes of six good-sized rooms and bath, with front and back porches, have been built in Canada for $3,000 approximately. With outside temperatures dropping to as low as 40 degrees below zero, less than $50 worth of coal is being used each winter to keep them thoroughly comfortable.

TVA house of three rooms. By Earle S. Draper. 1934. 2p. Mimeographed. Tennessee Valley Authority, Knoxville, Tennessee.

Hydrology.

History and development of ground-water hydrology. By Oscar Edward Meinzer. Journal of the Washington Academy of Sciences. v. 24, no. 1. January 5, 1934. p. 6-32.

Insulation.

Insulation for new and old buildings. By G. D. Mallory. Engineering and Contracting. v. 47, nos. 39, 40, 42, 43, 46, 47, 50. September 27; October 4, 18, 25; November 15, 22; December 13, 1933. p. 923-927, 950-952, 983-987, 995-998, 1057-1059, 1073-1074, 1125-1129.

Metallic insulation. By F. A. Dufton. Heating, Piping and Air Conditioning. v. 6, no. 2. February, 1934. p. 63-64.

Irrigation.

Gentle-rain irrigation plan successful on farm. Popular Mechanics. v. 60, no. 5. November, 1933. p. 731. System is simple, calling for header of ordinary pipe hooked to water supply and some lengths of old, leaky fire hose or some lines of canvas tubing. Hose does not permit spraying from thousands of punctures because this would erode the soil and injure tender plants. Instead, water merely seeps through fabric in small drops and gradually spreads over area to be irrigated. Experiments have demonstrated that 27,154 gallons of water will cover an acre of ground with inch of water in manner of gentle rain. Another advantage of Robey system is that hose can be moved easily from place to place on farm, wherever water is available. Cost of canvas tubing is small and the whole layout is comparatively inexpensive. Hose lines may be placed between rows of plants in fields, among trees in orchards, and under bushes in small fruit patches. Water has been carried successfully through 600 feet of porous hose to thoroughly irrigate ten acres of land in some tests.

Low cost irrigation for farms. O. W. Willcox. Facts About Sugar. v. 29, no. 1. January, 1934. p. 5-6. Home-made systems run by Diesel or electric power which are found cost savers by Western sugar beet growers.

Views on irrigation and water supply. By H. T. Burgers. South African Institution of Engineers Journal. v. 32, no. 3. October, 1933. p. 61-62.

Land.

How may we make best use of our land? Washington Farmer. v. 69, no. 2. January 25, 1934. p. 4. Nobody knows until comprehensive survey is made to reveal and coordinate basic information.

Land. (Cont'd)

Is there too much farm land? B C. E. Rogers. Successful Farming. v. 32, no. 2. February, 1934. p. 7, 62. Possible future needs must be taken into account when seeking answer.

Logs.

Stumpage and log prices for the calendar years 1931 and 1932. Compiled by Henry B. Steer. 1933. 104p. U.S. Department of Agriculture. Statistical bulletin no. 44.

Lubrication.

Lubricating properties of greases from petroleum oils. By F. H. Rhodes and H. D. Allen. Industrial and Engineering Chemistry, v. 25, no. 11. November, 1933. p. 1275-1280. In lubrication of soda-base greases, soap plays important part in formation of lubricating film; glycerol present aids in stabilizing structure of grease, reduces change in consistency on heating or working, increases lubricating power, eliminates increase in coefficient of static friction on heating and reduces susceptibility to moisture; effect of proportioning amount of glycerol present. Bibliography.

Lubrication value and its attainment. By A. F. Brewer. Southern Power Journal. v. 52, no. 2. February, 1934. p. 47-48.

Meters.

Factors in accuracy of current-meter measurement. By Carl Rohwer. Canadian Engineer. v. 66, no. 1. January 2, 1934. p. 15. Meter must be calibrated carefully and accurate measurements cannot be made unless conditions at gauging section are favorable.

Miscellaneous.

Concentrated loads on slabs. By Clyde T. Morris. 1933. 20p. Ohio. Engineering Experiment Station. Bulletin no. 80.

Respiration calorimeter. By Winfred W. Braman. 1933. 36p. Pennsylvania Agricultural Experiment Station. Bulletin no. 302. Description of the construction and operation of the respiration calorimeter for larger farm animals.

Mississippi River.

Experiment to determine the effects of Mississippi River backwater on the Red River. 1933. 15p. U.S. Waterways Experiment Station, Vicksburg, Mississippi. Paper no. 10.

Moisture.

Moisture and fertility relations of subsoil variations in heavy silt loam soil at Goodwell, Oklahoma. By H. H. Tinnell. 1933. 11p. Oklahoma Agricultural Experiment Station. Bulletin no. 214.

Motors.

New designs extend synchronous motor uses. By Charles C. Shutt. Power. v. 78,

Motors. (Cont'd)

no.2. February, 1934. p. 86-87. Two new designs of high-speed synchronous motors, one for severe starting conditions, another for centrifugal pump applications, take comparatively low starting current when started by connecting directly to line.

Power by electric motor. Part 9. Motors and control for cotton seed oil mills. By H. M. French. Southern Power Journal. v. 52, no. 2. February, 1934. p. 49-51.

Painting.

First coat of paint on wood gives little protection. Popular Mechanics. v. 60, no. 5. November, 1933. p. 665. From tests conducted at Forest Products laboratory at Madison, Wisconsin, it was found that major portion of protection offered by paint comes from second and further coats.

Tricks of painting your home. By W. Clyde Lammey. Popular Mechanics. v. 60, no. 4. October, 1933. p. 628-633.

Pipes and Piping.

Computing the thickness of pipe. By Sabin Crocker. Heating, Piping and Air Conditioning. v. 6, no. 2. February, 1934. p. 55-58. Deals with formula for pipe-wall thickness, explaining basis of formula and differentiating between requirements of individual sections of the Code. Formula serves to reconcile in ingenious manner empirical rules of old order with rational system of computation, thus harmonizing past practice with new system which can be extended to fields beyond scope of empirical rules.

Plows and Plowing.

Dynamic properties of soil. V. Dynamics of soil on plow moldboard surfaces related to scouring. By Ralph D. Doner and M. L. Nichols. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 9-13. Paper deals with solution of problem of selection or development of plows which would scour or at least shed sticky "push" soils common to many sections of southeast, and suggests remedy for adhesion or scouring troubles as far as shape of moldboard is concerned.

Problems of plow bottom manufacture. By J. P. Seaholm. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 7-8, 13. This paper is not so much concerned with technical phases of manufacturing problems as it is with their practical application in terms of results in field performance and utility of implement. Problem No. 1. Fabrication of parts to insure correct assembly within specified limits. Problem No. 2. Uniformity of curvature of plow bottom surfaces. Problem No. 3. Avoiding removal of the plow-face hard material in grinding and polishing operations. Problem No. 4. Interchangeability of plow bottom parts. Problem No. 5. Welding low-carbon share landside to high-carbon share blade. Problem No. 6. Proper distribution of metal in the point. Problem No. 7. Welding the shin piece to the moldboard of the plow. Problem No. 8. Avoidance of soft spots in the face of the moldboard and share. Problem No. 9. Hardness of soft-center steel for good scouring qualities.

Status of research on plowing problems. By I. F. Reed. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 3-6. Research work in plowing is being carried on by agricultural engineers in several state agricultural experiment stations, one of main objectives of which is to eliminate guess work from plow design, by basing such design on definite specifications of various soil types and condition in which plows are to be used. Engineers aim at uniformity of method in plow studies, so that results can be correlated to determine more quickly and effectively basic relations between soil constants and plow characteristics.

Plumbing.

Analyze plumbing codes with drawings. By Wm. W. Stevens. Domestic Engineering. v. 142, no. 6. December, 1933. p. 27-28, 34.

Potatoes.

Effect of handling methods on quality of Maine potatoes. By William E. Schrumpf. 1933. 181-221p. Maine. Agricultural Experiment Station. Bulletin no. 365. Object of study: 1, to determine extent of mechanical injuries due to: (a) digging, (b) picking into baskets and emptying into barrels, (c) placing in storage, (d) development in storage, (e) moving to graders, and (f) grading; and 2, to show relationships between various handling practices and mechanical injuries in order to point out those practices which were most effective in preventing such injuries.

Poultry Houses and Equipment.

Electric brooders. Rural Electrification and Electro-Farming. v. 9, no. 103. December, 1933. p. 197-198, 200, 202. Advantages of electric brooders. Saving in time and labor. Various designs and their special features. Moderate cost of operation.

Relation of electricity to poultry production. Project no. 83. Electric brooders. By L. F. Payne and C. A. Logan. 1933. 22p. Mimeographed. Kansas State College.

Straw loft house favored by poultrymen. Wisconsin Agriculturist and Farmer. v. 60, no. 25. December 9, 1933. p. 5. Straw is filled in over slatted or wire covered ceiling. Fill loft up to gable. As it settles it will be down to ventilating doors or windows, which should be opened for short time on mild days to allow escape of moisture which is drawn up through straw pack.

Power.

Study of the cost of horse and tractor power on Illinois farms. By P.E. Johnston and J. E. Wills. 1933. 269-332p. Illinois. Agricultural Experiment Station. Bulletin no. 395.

Thirteenth annual report of the Federal Power Commission, fiscal year ended June 30, 1933. Washington, U. S. Government Printing Office, 1934. 350p.

Power Plants.

Steam and hydro developments over all sections of country. Power Plant Engineering. v. 38, no. 2. February, 1934. p. 84-87. Boulder Canyon, Parker Dam, All American Canal, Seminoe Dam, Verde Valley, Navy and Treasury Department projects add to total expenditures for power developments.

Public Works.

Public works in the new deal. By Harold L. Ickes. Architectural Forum. v. 59, no. 3. September, 1933. p. 153-159. Gist of the act; special board of public works; regional advisers; state engineers; planning board; housing division.

Public Works program aims at coordinated development. Power Plant Engineering. v. 38, no. 2. February, 1934. p. 76-81.

Pumps and Pumping.

Design and operation of drainage pumping plants in the Upper Mississippi Valley. By John G. Sutton. 1933. 60p. U.S. Department of Agriculture. Technical bulletin no. 390.

Reversed flow through centrifugal pumps. By Morrough P. O'Brien and James E. Gosline. Power Plant Engineering. v. 38, no. 2. February, 1934. p. 100-102. Check up for possible overspeeding or excessive shaft strain under various conditions.

Radiation.

Studies of solar radiation through bare and shaded windows. By F. C. Houghton, Carl Gutherlet, and J. L. Blackshaw. Heating, Piping and Air Conditioning. v. 6, no. 2. February, 1934. p. 67-74.

Rain and Rainfall.

Rainfall and runoff. By A. B. Ballantyne. Arizona Producer. v. 12, no. 21. January 15, 1934. p. 11, 14. Further inquiry into why Arizona rivers carry less water though precipitation is greater.

Rainfall and runoff. By A. B. Ballantyne. Arizona Producer. v. 12, no.22. February 1, 1934. p. 5-6. Investigator asks if forests shall be managed for water or timber production.

Refrigeration.

Carbon dioxide thermodynamics. Part IV. Solidification. By J. C. Goosmann. Refrigerating Engineering. v. 27, no. 1. January, 1934. p. 27-29, 40.

New insulated containers. Ice and Cold Storage. v. 36, no. 429. December, 1933. p. 211. Dyson insulated container represents latest development in transport of perishable foodstuffs by road, rail or sea. Most popular body of range, for transport of chilled or frozen meat, is insulated trailer having internal dimentions 13 feet long by 6 feet 6 inches wide by 6 feet 10 inches high, giving capacity of approximately 575 cubic feet. It has been designed for load of 8 to 10 tons. Refrigeration equipment consists of two bunkers, one at each end of body, each capable of holding 100 pounds of "Drikold," and each fitted with finned conductor plate which serves to abstract heat from atmosphere and to conduct it to refrigerant.

Refrigerated railway transport. By Franz Levy. Cold Storage and Produce Review. v. 36, no. 429. December 21, 1933. p. 278-280. Modern systems and their capabilities.

Utilization of sewage sludge gas for refrigeration. By Guy E. Griffin. Water Works and Sewage. v. 80, no. 12. December, 1933. p. 426.

Water in refrigeration. By Walter L. Fleisher. Refrigerating Engineering. v. 27, no. 1. January, 1934. Influence of its quality and temperature. City water problem. Its use as refrigerant.

Repairs and Repairing.

Whitewash on farm. Hoard's Dairyman. v. 78. no. 19. October 10, 1933. p. 338.

Soils.

Large retaining-wall tests. I. Pressure of dry sand. By Karl Terzaghi. Engineering News-Record. v. 112, no. 5. February 1, 1934. p. 136-140. Series of five papers reporting fundamental results. Giving tests at Massachusetts Institute of Technology, which furnish for first time data covering effect on earth pressure of wall movement through entire range up to yield sufficient to produce slip.

Study of claypan soils. By Irvin C. Brown, T. D. Rice and Horace G. Byers. 1933. 43p. U.S. Department of Agriculture. Technical bulletin no. 399.

Spraying and Dusting.

Penetration of insecticidal oils into porous solids. By W. M. Hoskins. 1933. 49-82p. California. Agricultural Experiment Station. Hilgardia. v. 8, no. 2.

Standardization.

Government board for consumer standards proposed by NRA committee. Industrial Standardization and Commercial Standards Monthly. v. 5, no. 1. January, 1934. p. 1-8. Government board to develop and promulgate standards for all types of products sold to ultimate consumer has been proposed by Consumers' Advisory Board of the NRA. Board would be set up jointly by Consumers' Advisory Board and Consumers' Council of Agricultural Adjustment Administration and financed by them. According to proposal, Board would have budget of $65,000 for first year, funds to be supplied by Consumers' Advisory Board and Consumers' Council. Board would consist of director and technical staff with interdepartmental advisory committee drawn from appropriate federal bureaus.

Tennessee Valley Authority.

Tennessee Valley Authority, General information. 1933. 25p. Mimeographed. Knoxville, Tennessee.

Tennessee Valley Authority - National experiment. Power Plant Engineering. v. 38, no. 2. February, 1934. p. 88-89. Central authority created to coordinate agricultural navigation and sociological demands in Tennessee

Valley with electric power as backbone of program.

T.V.A. starts rural work. Electrical World. v. 103, no. 4. January 27, 1934. p. 151. Tennessee Valley Authority is furnishing part of materials, engineering and construction equipment needed. Rest of materials and labor are being supplied by local community.

Tires.

Tractive performance of pneumatic tires and steel wheels on farm tractors. By B. D. Moses and K. R. Frost. Implement Record. v. 31, no. 1. January, 1934. p. 12-13. Summary: 1. Pneumatic rubber tire had decided advantage over steel wheel in fuel consumption at higher speeds. 2. Higher per cent of rated drawbar pull can be developed in second and high gears with rubber tires than with steel wheels. 3. Steel wheels with lugs showed higher per cent of drawbar pull in low gear. 4. Slippage is controlling factor limiting load drawn with rubber tires, while steel-wheeled tractor is limited by power of engine. 5. Maximum horsepower is increased when gear changes are made up to higher speeds with rubber-tired tractor; it is increased with steel wheels. 6. At any given per cent of rated drawbar pull rubber-tired tractor is more economical for each gear ratio on either firm or cultivated soil. 7. Fuel required to move tractor without load is less with rubber tires than with steel wheels and lugs. Rubber tires roll with less resistance on firm soil; steel wheels, on cultivated soil.

Tractors.

Allis-Chalmers strikes for the lighter tractor market. Farm Implement News. v. 55, no. 2. January 18, 1934. p. 16-18. Announces two-plow model W at $675 on steel, or $825 with air tires front and rear and wheel weights. Has four speed automotive-type transmission.

Nebraska tractor tests, 1920-1933. 1934. 32p. Nebraska. Agricultural Experiment Station. Bulletin no. 285.

New Allis-Chalmers "W" for the smaller sized farms. Implement & Tractor Trade Journal. p. 49, no. 2. January 27, 1934. p. 14-a, 14-b, 18-a, 18-b. New two-plow model has four speeds with high for road transportation. Sells for $675, with steel wheels and $825 with air tires on all four wheels.

1933 cooperative tractor catalog. Implement and Tractor Trade Journal, Kansas City, Mo., 1934. 228p. Illustrated directory of tractors, tractor accessories and power farming machinery.

Tests with a balloon-tire tractor. By Fred Hawthorn. Farm Journal. v. 58, no. 2. February, 1934. p. 5, 14.

Ventilation.

Estimated data on the energy, gaseous, and water metabolism of poultry for use in planning ventilation of poultry houses. By H. H. Mitchell and M. A. R. Kelley. Journal of Agricultural Research. v. 47, no. 10. November 15, 1933. p. 735-748.

Walls.

Rammed earth for farm building walls. By Ralph L. Patty. Agricultural Engineering. v. 15, no. 1. January, 1934. p. 14-15, 17.

Thirsty bricks drink water and prevent leaky walls. Popular Mechanics. v. 60, no. 4. October, 1933. p. 580. To avoid leaky walls in brick buildings, use absorbent or "socky" brick, and make mortar joints thin. Brick should be able to absorb from five to ten per cent of its weight in water in two days, and most of absorption should take place in first ten minutes. Ability of brick to "drink" water insures good bonding with mortar, making wall virtually one solid piece. There should be some lime in mortar to insure this action.

Water Systems.

Step installation of a water system. 1933. 6p. Maine. University. Extension Service. Circular no. 113.

Windmills.

Thousand-watt wind plant produces farm power. Popular Mechanics. v. 60, no. 4. October, 1933. p. 535. Rated at 1,000 watts, wind-driven power plant generates sufficient electricity for farm, dairy or summer resort. By tilting blades several degrees back from perpendicular, plant is converted into something resembling hugh dart which constantly heads into wind, thus eliminating vane found on most windmills. Large generator starts charging at only 140 revolutions per minute, so no gearing is used. Automatic governor on propeller assembly controls speed of plant in all forms of wind. Adjustment in control may be made to increase or decrease pitch of blades, thus regulating charging rate. Plant is supplied with batteries of sufficient capacity to carry entire load for week or ten days of calm.

Wind-driven electric plant runs farm equipment. Popular Mechanics. v. 60, no. 5. November, 1933. p. 721. Three-blade propeller, made of metal and having diameter of sixteen feet, is used. Heavy-duty storage batteries supply current from five to eight days when wind fails. Rate of charging batteries may be regulated by means of governor that causes propeller to turn away from wind when windmill's speed becomes too great. In a storm, blades turn so that only edges are affected. Governor, generator, gear case and main bearings are inclosed in weather-proof hood. Galvanized steel towers support propeller at height to catch wind. Plant is available in thirty-two or 110-volt sizes.